

## REMARKS

The enclosed is responsive to the Office Action dated November 1, 2010. By way of the present response applicants have: 1) amended claims 1, 5, and 11-13; 2) added no claims; and 3) canceled claims 2, 3, and 9. Claim 1 has been amended to recite the subject matter of canceled claims 2 and 3. Claims 5 and 11-13 have been amended to recite new claim dependencies. No new matter has been added.

Reconsideration of this application as amended is respectfully requested.

### Claim Rejections – 35 U.S.C. §102

Claims 1, 11-13, 15, 18, 19, 21, 23-26, and 28 stand rejected under 35 U.S.C. §102(a) as being anticipated by U.S Patent No. 6,492,661 by Chien et al. (“Chien”).

Applicants respectfully submit that Chien at least fails to disclose

forming a first ohmic contact layer on a first surface of the multiple epitaxial layers, the first surface being remote from the substrate, the first ohmic contact layer comprising multiple metal layers and the first ohmic contact layer being a mirror at a junction between the first surface of the multiple epitaxial layers and the first ohmic contact layer.

(Amended claim 1).

The Examiner appears to argue that Chien’s reflection layer 125 is equivalent to the claimed ohmic contact layer. Applicants disagree and note that Chien specifically states that “[r]eflection layer 125 can form effective ohmic contact with the p type ohmic contact layer 124, **but forms Schottky contact with the p type upper cladding layer 123.**” (Chien, col. 5, lines 57-59). A Schottky contact is the opposite of an ohmic contact.

The Examiner also refers to Chien's ohmic contact layer 124 as being equivalent to the claimed first ohmic contact layer. While layer 124 of Chien is an ohmic contact layer, it consists of a p-type InGaP layer and a p-type GaAs layer. (Chien, col. 5 lines 42-44). This is different from the first ohmic contact layer of the claimed invention, which comprises "multiple metal layers" and "a mirror." Chien does not disclose that the ohmic contact layer 124 is comprised of multiple metal layers or as being a mirror as claimed.

Applicants are unclear as to whether the Examiner's argument regarding the first ohmic contact layer is based upon Chien's layer 124 or layer 125. As argued above, neither layer 124 nor layer 125 is disclosed as having all of the claimed features of the first ohmic contact layer set forth in claim 1. If the Examiner's argument is based on both layers – i.e., that layer 124 provides the ohmic contact and that layer 125 provides the multiple metal layers and mirror – applicants respectfully submit that the ohmic contact layer 124 and the reflection layer 125 are described as two separate layers by Chien.

Applicants further submit that Chien fails to disclose

coating the first ohmic contact layer with an adhesion layer prior to application of a seed layer of a thermally conductive metal, wherein the adhesion layer is formed on the seed layer by electroplating and the seed layer is patterned with photoresist patterns before the electroplating;

forming a relatively thick layer of the thermally conductive metal between the photoresist patterns and adjacent to the first ohmic contact layer, the thermally conductive metal being of sufficient thickness to provide a heat sink.

(Amended claim 1).

The Examiner alleges that Chien discloses these features in col. 5, lines 36-67. In the rejection of canceled claim 2, the Examiner referred to reflective layer 125 as being equivalent to the claimed first ohmic layer. Following the Examiner's argument, Chien should describe coating reflective layer 125 with an adhesion layer prior to the application of a seed layer. Applicants submit, however, that Chien only describes that a "p type conductive substrate 126 serving as a second substrate is thermally combined with the metal reflection layer 125." (Chien, col. 5, lines 51-53). Chien is silent regarding an adhesion layer and a seed layer.

Furthermore, Chien is silent regarding a seed layer being patterned with photoresist patterns before the adhesion layer is formed on the seed layer by electroplating and forming a relatively thick layer of thermally conductive metal between the photoresist patterns. The Examiner alleges that the conductive substrate 126 is equivalent to the claimed relatively thick layer. Chien does not describe or illustrate conductive substrate 126 as being formed between photoresist patterns.

Accordingly, applicants respectfully submit that the rejection of claim 1 has been overcome.

Given that claims 11-13, 15, 18, 19, 21, 23-26, and 28 are dependent upon claim 1, and include additional features, applicants respectfully submit that the rejection of claims 11-13, 15, 18, 19, 21, 23-26, and 28 has been overcome for at least the reasons set forth above.

### Claim Rejections – 35 U.S.C. §103

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Chien. The Examiner alleges that a height in the range 15 to 500 micrometers, a thickness in the range 3 to 500 micrometers, and a spacing in the range of 200 to 2,000 microns would be obvious in light of Chien. In particular, the Examiner cites MPEP §2144.05 and *In re Woodruff*. Applicants respectfully disagree with the Examiner's assertion and interpretation of MPEP §2144.05 and *In re Woodruff*. The MPEP §2144.05 in its citation of *In re Woodruff* states “[i]n the case where the **claimed ranges ‘overlap or lie inside ranges disclosed by the prior art’** a prima facie case of obviousness exists.” (emphasis added). In contrast to the situation cited, Chien does not disclose a range and, therefore, there is no overlap of ranges between Chien and claim 5. Applicants respectfully submit that the Examiner's statement that applicants must show that the chosen dimensions are critical is not correctly applied. A showing of the criticality of the claimed range is used to “rebut a prima facie case of obviousness **based on overlapping ranges.**” (MPEP §2144.05 III) (emphasis added). Should the Examiner maintain this rejection, applicants respectfully request that the Examiner demonstrate the overlapping ranges between the features of claim 5 and Chien's disclosed embodiment.

Furthermore, claim 5 is dependent upon claim 1, and includes additional features. Accordingly, applicants submit that the rejection of claim 5 has been overcome for at least the reasons set forth above.

## CONCLUSION

Applicants respectfully submit that in view of the amendments and arguments set forth herein, the applicable objections and rejections have been overcome.

Applicants reserve all rights under the doctrine of equivalents.

Pursuant to 37 C.F.R. 1.136(a)(3), applicants hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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Date: May 2, 2011

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